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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/681,203

10/09/2003

Hidayat Husain

4320-521

6009

1059

7590

11/27/2006

BERESKIN AND PARR  
40 KING STREET WEST  
BOX 401  
TORONTO, ON M5H 3Y2  
CANADA

EXAMINER

CECIL, TERRY K

ART UNIT

PAPER NUMBER

1723

DATE MAILED: 11/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/681,203

Applicant(s)

HUSAIN ET AL.

Examiner

Mr. Terry K. Cecil

Art Unit

1723

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 19 September 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,3-9,14 and 15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 3-9, 14-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>one</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

2. Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Holland et al. (U.S. 4,855,058) in view of Uhlinger (U.S. 6,190,556) and Schneider (U.S. 4,814,079). Holland discloses the process of filtering water in a single pass in a spiral wound membrane module including multiple stages and tailoring the module to produce a recovery higher than 75%, and more particularly 90% (abstract, Figs. 1 and 6, col. 7, lines 5-15, column 9, lines 50-60, and column 10, lines 7-16). Reference '058 discloses changing the dimensions of the feed channel to avoid changes in feed fluid velocity and tailoring the module for a predetermined recovery (column 6, lines 30-68, and column 7, lines 1-14) but doesn't specify the minimum flow velocity in any stage. However, Schneider teaches that in reverse osmosis modules a velocity of 0.5-0.1 feet/second is sufficient to minimize concentration polarization when the feed water does not contain suspended solids (see column 1, lines 55-62). It is therefore; clear that selecting a

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velocity of that claimed is within ordinary skill. Holland doesn't teach the claimed permeability but such is taught by Uhlinger who also teaches a filtration process removing hardness (e.g. divalent ions) including filtering in a membrane module having a plurality of stages in series, wherein rejection is greater than 75% (e.g. 95%) and includes a permeability greater than 0.1 gfd/psi (e.g.  $25/144 = .16$  psi, col. 12, lines 52-63). It is considered that it would have been obvious to one ordinarily skilled in the art at the time of the invention to have the permeability of Uhlinger in the modified Holland since Uhlinger teaches that such is sufficient for a high salt rejection rate. As for claims 14 and 15, Uhlinger teaches the claimed feed pressures to have the benefit of a high rejection rate, see col. 8, lines 20-25.

3. Claims 1 and 4-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over the modified Holland in view of the Japanese Reference 63-171605. Holland was expanded above. '605 teaches backwashing hollow fiber lumens of a membrane module with water having CO<sub>2</sub> therein at time when the permeate production is stopped [as in claims 1, 4-5 and 7-9]. It is considered that it would have been obvious to one ordinarily skilled in the art at the time of the invention to have the backwashing step of '605 in the method of Holland since '605 teaches the benefit of safely remove the deposits on the surfaces of hollow yarn membranes and because the skilled man would recognize the necessity of cleaning (see Uhlinger col. 10, lines 52+). As for claim 6, adding CO<sub>2</sub> to the water to have the Langelier zero or slightly negative is within ordinary skill and obvious to prevent washing fluid that is corrosive and that would damage the membranes. Uhlinger desires to maintain the integrity of the membranes (col. 10).

***Response to Arguments***

4. Applicant's arguments with respect to the claims have been considered but are moot in view of the new grounds of rejection using the newly submitted IDS references. Concerning the arguments in view of Japanese '605, the examiner contends that upon reversal of flow the permeate is considered to be feed upon re-introduction into the module.

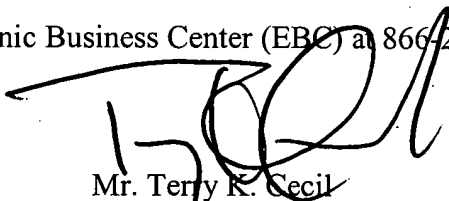
Applicant's submission of an information disclosure statement under 37 CFR 1.97(c) with the fee set forth in 37 CFR 1.17(p) on 9-19-2006 prompted the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 609.04(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

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5. Contact Information:

- Examiner Mr. Terry K. Cecil can be reached at (571) 272-1138 at the Carlisle campus in Alexandria, Virginia for any inquiries concerning this communication or earlier communications from the examiner. Note that the examiner is on the increased flextime schedule but can normally be found in the office during the hours of 8:30a to 4:30p, on at least four days during the week M-F.
- Wanda Walker, the examiner's supervisor, can be reached at (571) 272-1151 if attempts to reach the examiner are unsuccessful.
- The Fax number for this art unit for official faxes is (571) 273-8300.
- Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Mr. Terry K. Cecil  
Primary Examiner  
Art Unit 1723

TKC  
November 21, 2006